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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/073,529 | 02/11/2002 | Yao-Dong Ma | | 5256 |

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EXAMINER

LIU, MING HUN

| ART UNIT | PAPER NUMBER |
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2675

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DATE MAILED: 08/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/073,529

Applicant(s)

MA, YAO-DONG

Examiner

Ming-Hun Liu

Art Unit

2675

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 11-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "hole" requires more elaboration, since in its current form, one skilled in the art would have a difficulty determining the exact limitations included in the "hole" pulse.

Claims 19 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear as to which "line" the scanning pulse is being shifted to. It is also unclear as to what the applicant means by "a true binary data generates two-dimensionally optical "ON" and "OFF" states on the display's elements in a video speed."

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 1-4, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US patent 5,422,033 to Mochizuki et al.

In reference to claim 1, as seen from figure 2, Mochizuki's discloses a video display with a plurality of polarizers (items 4 and 5) with transparent conductive substrates (items 2 and 3) and a cholesteric material (item 1) with a viewable homeotropic and focal conic texture (column 3, lines 43-47). The different sections are arranged in polarizer, substrate, cholesteric material, substrate, polarizer order (figure 2). Furthermore, Mochizuki teaches a voltage power supply that is driven at a high rate speed to support video motion (column 4, line 44-48, applied between the two electrodes (column 12, lines 22-23).

Mochizuki's however does not teach that the optical "on" state be during the homeotropic state nor the "off" state be during the focal conic state. In fact Mochizuki's invention delegates the "on" and "off" states during the opposite textures with "on" during focal conic and "off" during homeotropic.

This difference is contributed to the choice in polarization values of the two polarizers a simple modification.

The difference in polarization values is a design criterion that can be easily adjusted to achieve a desired result and polarization effect.

As one skilled in the art understands, Mochizuki's invention and the applicant's invention does not divert from the spirit of the invention. Both inventions call upon the particular molecular alignment of the cholesteric material the difference lies not in the orientation of the materials but the after effect on how the light impinges on the polarizers.

In reference to claim 2, it can be seen from figure 2b, that during the homeotropic state, the molecules are aligned in a wave-guide fashion where the polarity of the light is maintained.

In reference to claim 3, as explained by Mochizuki on column 12, line 45-47 the focal conic state has a helical structure that rotates the polarity of the light.

In reference to claim 4, the bistability of the homeotropic metastable state (column 4, lines 3-8) and the focal conic state (column 12, lines 61-65) is maintained by predetermined voltage levels (figure 1).

In reference to claims 9 and 10, it can be seen from figures 2 and 3, that Mochizuki discloses both reflective and transmissive displays.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mochizuki in view of US Patent 5,661,533 to Wu et al.

Mochizuki teaches a display that is similar to the one being claimed as demonstrated in the rejection of claim 1, however Mochizuki never explicitly states that the frame speed of 30 frames per second.

Wu, in his disclosure of a high-speed cholesteric display, teaches that the frame rate must be at least 30 frames per second (column 7, line 35).

The frame rate of Mochizuki's invention can be driven by a fast acting voltage supply.

It would have been obvious to one skilled in the art to implement this limitation on the frame rate because video at less than 30 frames per second would produce high flickering in motion.

6. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mochizuki in view of US patent 6,320,563 to Yang et al.

In reference to claims 6-8, Mochizuki's invention utilizes the homeotropic state as a viewable optical state.

Mochizuki however, does not discuss the usage of the standard third state, the planar state.

As Wu demonstrates, it is well known in the art that cholesteric displays exhibit three states, focal conic, homeotropic and planar (column 1, lines 26-28). The bistability of focal conic and planar textures is the main appeal of cholesteric materials, where planar textures are often designated as being "on" using Bragg reflection bandwidth (column 1, lines 43-44). The stability of the planar state in a zero field is the definitive usage of cholesteric display materials (column 1, 45-46).

It would have been obvious to one skilled in the art to incorporate the bistability (planar to focal conic) feature of cholesteric displays because of its stable, power saving, capabilities when dealing with slow motion images. Furthermore, as one skill in the art would attest that the image quality of the homeotropic and planar states should coincide in order to minimize the quality of transitions between the two "on" states.

Allowable Subject Matter

7. Claims 11-18 are rejected according to 112 2nd paragraph indefiniteness, but would be allowable if the indefiniteness is remedied.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

6,172,720 to Khan et al.

6,507,331 to Schlangen et al.

6,317,189 to Yuan et al.

4,812,034 to Mochizuki et al.

6,344,887 to Ma et al.

6,204,835 to Yang et al.

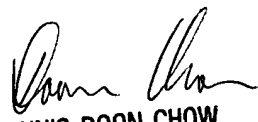
5,274,484 to Mochizuki et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ming-Hun Liu whose telephone number is 703-305-8488. The examiner can normally be reached on Mon-Fri.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ming-Hun Liu


DENNIS-DOON CHOW
PRIMARY EXAMINER